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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,541	10/03/2003	Gerard Harbers	LUM-03-09-05	3507
32566	7590	08/22/2005	EXAMINER	
PATENT LAW GROUP LLP 2635 NORTH FIRST STREET SUITE 223 SAN JOSE, CA 95134			CRANSON JR, JAMES W	
			ART UNIT	PAPER NUMBER
			2875	

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/678,541

Applicant(s)

HARBERS ET AL.

Examiner

James W. Cranson

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PM

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 5, 12, 17-22, 28 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6-11, 13-15, 23-27 and 30-32 is/are rejected.
- 7) ☒ Claim(s) 3 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/22/05, 4/15/05 etc.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 5,12,17-22,28 and 29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/25/2005. Claims 1-4,6-11,13-16,23-27 and 30-32 will be examined on the merits.

### ***Claim Objections***

Claim 3 is objected to because of the following informalities: Insufficient antecedent for “pitch” in line 2. Appropriate correction is required.

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The following claims have been rejected in light of the specification, but rendered the broadest interpretation [MPEP 2111]. Applicant should positively cite the structural limitations to be given full patentable weight within an apparatus claim.

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### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1, 2 and 30 - 32 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,143,433 to Farrell or USPN 6,007,209 to Pelka.

Farrell discloses a system for backlighting liquid crystal display using an array of LEDs.

Regarding claim 1:

Farrell discloses a display device (figures 8 and 9) comprising:

a housing (24) comprising reflective surfaces (20) and top opening (figures 8 and 9) through which light is emitted for backlighting a liquid crystal display panel (12);

an array of substantially identical LEDs (ABSTRACT) supported on a reflective bottom surface in the housing (figures 1,2,8 and 9), each LED emitting light through top and side portions of the LEDs ( inherent that LEDs emit light through top and side), LEDs being separated from one another by a distance greater than the width of a single LED ( illustrated in figure 1, distance between LEDs 22) and a diffuser (16) above the LEDs (figures 1,2,8 and 9) for providing diffused light to an LCD panel (12).

Regarding claim 2, according to claim 1:

Farrell discloses a LCD panel over the diffuser.

Regarding claim 30, according to claim 1:

Farrell discloses and illustrates in figure 1 wherein reflective bottom surface in the housing comprises a bottom surface forming the housing.

Regarding claims 31 and 32, the method of constructing article claims 1 and 2

Claims 31 and 32 are anticipated by the Farrell for the same reasons stated in the rejection of article claims 1 and 2 because the article limitations are found in the limitations of the method claims.

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Using Pelka as source of 35 U.S.C. 102(b) anticipation

Pelka discloses a display device including a housing with reflective surfaces, a top hole for emitting light that backlights LCD panel, array of LEDs on reflective bottom of housing with LEDs separated and diffuser above LEDs.

Regarding claim 1

A display device (fig 1) comprising:

a housing comprising reflective surfaces (abstract, "housing having diffusively reflecting bottom and side surfaces") and a top opening through which light is emitted for backlighting a liquid crystal display panel (abstract);

an array of light emitting diodes (13) supported on a reflective bottom surface in the housing (abstract, "housing having diffusively reflecting bottom surface", second series of LEDs is mounted within the cavity on the bottom wall of the housing"), each LED emitting light, the LEDs separated from one another by a distance greater than the width of a single LED (column 5, lines 1-5); and a diffuser above the LEDs for providing diffused light to an LCD panel ( column 5, lines 30-35, lines 39-45, column 6, lines 21-25).

Regarding claim 2 according to claim 1:

Pelka discloses that the LCD panel is over the diffuser.

Regarding claim 30, according to claim 1:

Pelka discloses that the reflective bottom surface in the housing comprises a bottom surface forming the housing.

Regarding claims 31, and 32 according to claim 31, the method of article claims 1, 2:

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Claims 31 and 32 are anticipated by the Pelka reference for the same reasons stated in the rejection of the article claims 1 and 2 because the article limitations are found in the limitations of the method claims.

For example, claim 1 states a display device comprising : a housing comprising reflective surfaces and a top opening through which light is emitted for backlighting a LCD panel;

The first limitation of claim 31 states a method for constructing a display comprising: a housing comprising reflective surfaces and a top opening through which light is emitted for backlighting a LCD panel.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Regarding claim 4, according to claim 1:

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,143,433 to Farrell in view of USPN 6,883,950 to Adachi et al.

Farrell does not specifically disclose the pitch of the LEDs is greater than 20mm.

Adachi in plane like lighting units and display equipment teaches that the pitch is greater than 20mm. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with pitch that is greater than 20mm as taught by Adachi. The reason is to give a wider field of illumination.

Claims 6, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,143,433 to Farrell.

Regarding claim 6, according to claim 1;

Farrell does not specifically disclose that the LEDs comprise only blue LEDs. It would have been obvious to one of ordinary skill in the art at the time of invention to provide Farrell with all blue LEDs since the examiner takes Official Notice of the equivalence of blue LEDs and the LEDs used by Farrell.

Regarding claims 10, 11 and 13 according to claim 1, further comprising a phosphor layer beneath the diffuser, phosphor deposited on the diffuser and phosphor as diffuser.

Farrell discloses the use of phosphor layer and its use as a diffuser but does not specifically disclose that a phosphor layer is beneath the diffuser or deposited on the diffuser.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with phosphor layer beneath the diffuser or deposited on the diffuser because it has been held that lacking any criticality, to shift the location of prior art parts does not make the claimed invention patentable over that prior art ((*In re Japikse*, 86 USPQ 70 (CCPA 1950)).

Claims 7-9,13 and 23 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,143,433 to Farrell in view of USPN 6,799,865 to Ellens et al.

Regarding claim 7, according to claim 1, LEDs comprise only UV or near UV LEDs.

Farrell does not disclose the use of UV or near UV LEDs. Ellens teaches the use of UV LEDs in a LED-based planar light source for LCD backlighting.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with UV LEDs as taught by Ellen. The reason as taught by Ellen, column 2, lines 24-25 is that UV-LED is that “a more efficient light source can be created at lower cost”.

Regarding claims 8 and 9, according to claim 1, further comprising phosphor over the LEDs to convert light output into red, green and blue light.

Farrell does not specifically disclose that phosphor over the LEDs converts light output into red, green and blue light.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with phosphor over the LEDs to convert light output into red, green and blue light as taught by Ellen.

The reasons for using phosphor over LEDs to convert light output by LEDs into red, green or blue light as taught by Ellen (column 1, lines 18-25) is that it is well known in the



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illumination art to use “UV-emitting LEDs which excite three phosphors which respectively have their emission in the red, blue and green” and it is cheaper and easier to manufacture than substituting diodes of different colors.

Regarding claims 14 and 15, according to claim 1:

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,143,433 to Farrell in view of USPN 5,463,280 to Johnson.

Farrell does not disclose LEDs connected in series, total voltage drop across serially connected LEDs equaling publicly supplied standard AC supply voltage rectified and filtered.

Johnson teaches in a LED retrofit lamp having LEDs connected in series, total voltage drop across serially connected LEDs equaling publicly supplied standard AC supply voltage rectified and filtered. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with LEDs connected in series, total voltage drop across serially connected LEDs equaling publicly supplied standard AC supply voltage rectified and filtered as taught by Johnson. The reason as taught by Johnson include attendant reduction of losses and stresses on circuit components.

Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,143,433 to Farrell in view of USPN 6,160,596 to Sylvester et al.

Farrell does not disclose the use of phosphors for converting light emitted by LEDs from one color to another color. Sylvester in a backlighting system for a LCD teaches the use of phosphors for converting light emitted by LEDs from one color to another color. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with

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use of phosphors for converting light emitted by LEDs from one color to another color as taught by Sylvester. The reason as taught by Sylvester is reduced cost.

Regarding claim 23, according to claim 1;

Farrell as modified by Sylvester has first and second types of phosphors for converting light emitted by LEDs to first and second color.

Regarding claim 24, according to claim 23:

Farrell as modified by Sylvester has first and second types of phosphors for converting light emitted by LEDs substantially white light for backlighting the LCD panel.

Regarding claims 25, according to claim 23, and 26, according to claim 25:

Regarding claims 10, 11 and 13 according to claim 1, further comprising a phosphor layer beneath the diffuser, phosphor deposited on the diffuser and phosphor as diffuser.

Farrell as modified by Sylvester has phosphor but does not specifically disclose that a first type of phosphor is in the form of dots or that dots are deposited on the diffuser.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Farrell with a first type of phosphor that is in the form of dots or have dots that are deposited on the diffuser because it has been held that lacking any criticality, to shift the location of prior art parts does not make the claimed invention patentable over that prior art ((*In re Japikse*, 86 USPQ 70 (CCPA 1950)).

Regarding claim 27, according to claim 23:

Farrell as modified by Sylvester has first type of phosphors for converting blue light to one of red or green, and second type of phosphors for converting blue light to red or green.

***Allowable Subject Matter***

Claims 3 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 3, according to claim 1, adds that the housing has a height and the ratio of the height to the pitch of the LEDs is between approximately 0.3 to 1.2.

Claim 16, according to claim 1, adds LEDs connected in series, voltage drop equals standard AC, wherein LEDs in array are connected to perform a rectification of the AC supply.

The aforementioned limitations in combination with claim 1 are not found or taught in the art of record.

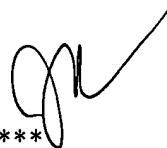
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James W. Cranson whose telephone number is 571-272-2368. The examiner can normally be reached on Mon-Fri 8:30A.M.- 5:00P.M..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandy O'Shea can be reached on 571-272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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PRIMARY EXAMINER